

CLAIMS

What is claimed is:

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1. A method for storing program code on a data processing device comprising:
- splitting said program code into one or more blocks;
 - assigning each of said blocks a header containing a sequence number identifying which portion of said program code each of said blocks correspond to;
 - storing said one or more blocks of program code and said associated headers in a non-volatile memory.
2. The method as in claim 1 further comprising:
- combining said blocks of program code in an appropriate order in memory based on said sequence numbers and processing said program code in response to a specified event.
3. The method as in claim 1 wherein said headers further comprise:
- an error detection code to detect whether said program code in each of said blocks is valid.
4. The method as in claim 3 wherein said error detection code is a CRC code.

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5. The method as in claim 1 further comprising:
upgrading said program code on said data processing device by replacing
a specified number of said one or more blocks, said specified number being less
than a total number of said blocks containing said program code.

6. The method as in claim 1 further comprising:
verifying a signature associated with said program code prior to storing
said program code.

7. The method as in claim 6 wherein verifying comprises:
applying a public key to said program code to generate a signature; and
comparing said signature to a signature generated via a private key.

8. The method as in claim 1 further comprising:
loading one of said blocks from non-volatile memory into volatile
memory;
modifying a portion of said program code stored in said block; and
storing said block with said modified program code back to said non-
volatile memory.

9. The method as in claim 8 further comprising:
re-calculating an error detection code associated with said block to ensure
that said program code contained in said block is valid.

10. A method implemented by a service for maintaining control over
stored on a data processing device:

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transmitting one or more applications from a server to said data processing device concurrently with block allocation data indicating blocks on said data processing device into which said one or more applications are to be stored; and

maintaining a list of all subsequent data transactions performed with said data processing device, said list usable by said server to construct a map of all applications stored on said data processing device.

11. The method as in claim 10 further comprising:

generating said map of all applications stored on said data processing device prior to a new transaction with said data processing device.

12. The method as in claim 11 wherein said new transaction is an application patch.

13. The method as in claim 11 wherein said new transaction is a new application download.

14. The method as in claim 12 further comprising:

transmitting said patch to said data processing device along with an indication of where said patch should overwrite a portion of said application.

15. The method as in claim 14 wherein said indication is an offset in memory.

16. The method as in claim 15 further comprising:

loading said one or more blocks of program code into volatile memory,

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identifying said portion of said program code with said offset and
overwriting said portion of said program code with said program code
patch.

17. The method as in claim 16 further comprising:
executing an error checking algorithm to ensure said one or more blocks
of program code containing said program code patch are valid.

18. The method as in claim 17 further comprising:
storing said one or more blocks of program code containing said program
code patch to non-volatile memory.

19. A method comprising:
maintaining a program code map on a server indicating how program
code is allocated among a plurality of non-volatile memory blocks on a data
processing device; and
using said program code map to facilitate modifications to said program
code on said data processing device.

20. The method as in claim 19 wherein using said program code map
comprises:
calculating a location of a program code patch within said program code;
and
transmitting said program code patch to said data processing device along
with said location.

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21. The method as in claim 20 wherein said location is an offset in memory.
22. The method as in claim 20 wherein maintaining a program code map comprises:
- maintaining a list of transactions between said server and said data processing device; and
 - running an algorithm to construct said map in realtime using said list of transactions, said algorithm being an algorithm executed on said data processing device to store program code within said plurality of non-volatile memory blocks.
23. The method as in claim 12 wherein said non-volatile memory blocks are flash memory blocks
24. The method as in claim 12 wherein using said program code map comprises:
- identifying a specific block within said non-volatile memory to be replaced;
 - transmitting said specific block to said data processing device;
 - said data processing device combining said block in volatile memory with one or more other blocks containing program code for a specific application and verifying a signature of said application; and
 - saving said specific block to non-volatile memory once said signature is verified.

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25. The method as in claim 24 further comprising:
executing a CRC to verify that said program code within said specific
block is valid.

26. A system comprising:
a server to transmit program code to a data processing device and to
continually monitor (1) which program code is stored on said data processing
device and (2) specific areas in a memory space in which said program code is
stored on said data processing device, and
to transfer additional program code to said data processing device along
with storage location data indicating where in said memory said additional
program code should be stored.

27. The system as in claim 26 wherein said storage location data
comprises an offset in said memory of said data processing device indicating
where within said memory said additional program code should be transmitted.

28. The system as in claim 19 wherein said storage location data
comprises one or more non-volatile memory blocks where said additional
program code should be stored.

29. The system as in claim 28 wherein said additional program code
comprises a patch to a current program stored on said data processing device.

30. The system as in claim 26 wherein said data processing device is a
wireless device.

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31. The system as in claim 28 wherein said server transfers a CRC value with each block of program code transmitted to said data processing device.

32. The system as in claim 29 wherein said server transfers an updated CRC value with said patch, said CRC value identifying data within a particular block in which said patch is required as being valid data.

33. The system as in claim 29 wherein said server transfers an updated application signature usable by said data processing device to authenticate an application upgraded by said patch.

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